DOCUMENT RESUME

ED 240 127 TM 830 796

AUTHOR Smith, B. Othanel
TITLE Mapping a Program for Teacher Examinations.
PUB DATE [80]
NOTE 40p.; Legibility problems due to faint print on some pages. Prepared for the Policy Council of the National Teacher Examinations.
PUB TYPE Viewpoints (120)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Beginning Teachers; *Educational Principles; Educational Theories; Elementary School Teachers; Long Range Planning; Preservice Teacher Education; Secondary School Teachers; *Teacher Education Programs; *Teacher Evaluation; *Teaching Models; Teaching Skills; *Test Construction; Test Items
IDENTIFIERS Blooms Taxonomy; *National Teacher Examinations

ABSTRACT

A plan is proposed for the revision of the National Teacher Examinations. The plan is based on measuring what is taught in teacher education curricula. Preservice pedagogical education consists of two types of studies: academic pedagogy and clinical pedagogy. Academic pedagogy consists of concepts and principles pertaining to the making of policies and programs and to legal and ethical questions. Achievement in academic pedagogy can be tested at any level of Bloom's taxonomy. Between academic pedagogy and clinical pedagogy is a component of teacher education that centers in curriculum study and evaluation, the teachable object on which instruction focuses and for which students are held accountable. Clinical studies are those which involve the student in observation and performance of classroom work. Tests of teacher competence should cover both academic and clinical pedagogy. Items at the first two levels of Bloom's taxonomy can be used to test the student's understanding of terms, concepts, and principles used in professional communication. Items above the second level can be designed to test the student's ability to perform in the classroom and school. (BW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
B.O. Smith & M. Goodison
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

ED240127

Mapping a Program for Teacher Examinations

B. Othanel Smith
University of South Florida

Abstract

Any plan for the development of examinations rests upon some set of propositions. For the plan set forth in this paper the set is as follows:

1. The program of studies of preservice pedagogical education consists of two types of studies: academic pedagogy and clinical pedagogy; the former consisting of concepts and principles pertaining to the making of policies and programs and to legal and ethical questions, the latter to classroom work.

2. Current changes in the program are in the direction of greater emphasis upon clinical content and experience and toward an extended period of preservice preparation.

3. The knowledge-base of clinical training is expanding and is now somewhat extensive, but it has not been assembled and organized either for program development or for the development of a testing program.

4. Like clinical knowledge, academic pedagogical knowledge has not been collected and sifted for elements relevant to the work of teachers.

5. Professional examination of teachers should be based on a body of useful, systematized knowledge in which teachers are to be disciplined. Where the knowledge is in disarray, as in pedagogy, the first phase of examination development is to collect, sift, and organize the knowledge of the field. (The rhetoric about good teaching, good teachers, and the like should be dropped. The emphasis should be on the knowledge-base of teacher preparation.)

6. Tests of teacher competence cover academic and clinical pedagogy. Since these are distinctly different kinds of content and require different kinds of performance, separate tests are indicated.

7. Tests of teacher competence should contain two sets of items: first, items at the first two levels of the Bloom

TM 830 796

taxonomy, and second, items above the second level. The first set tests the student's understanding of terms, concepts, and principles used in professional communication, and the second set can be designed to test the student's ability to perform in the classroom and school.

8. Tests of competence in clinical performance, made up of the second set, are useful if correct responses to their items mirror the behavior that research evidence and confirmed professional wisdom indicate the professional should exhibit on the job.

9. Tests of competence in policy and program formulation are useful if correct responses to their items mirror the performance involved in policy and program development.

10. Tests of comprehension and knowledge competence, first set of items in 8 above, are useful if the content of their items reflect the established concepts, principles, and technical language of the profession.

11. The competence of neither a trainee nor a teacher can be assessed by pupil achievement, but rather by the extent to which their performance accords with scientific procedures and techniques of teaching and verified professional wisdom.

12. To be called good, any teaching must reflect performance that accords with research knowledge of teaching and verified professional wisdom. (It follows that teaching, classified as good, is stable, changing as research knowledge is refined and extended.)

13. Teacher education is entering the information age, a period in which telecommunication will transform every aspect of our lives. The role of the teacher, and consequently pedagogical education, will be radically altered.

Mapping a Program for Teacher Examinations

B. Othanel Smith
University of South Florida

Given the likelihood that sweeping changes in the current program of teacher education are unlikely in the near future, the orientation chosen for this paper is expressed in guideline 2: Using teacher education curricula as a base and augmenting it by what we know about the "demands and practices of teaching."

The Current Program

The present program of professional studies leading to the bachelor's degree in education evolved approximately fifty years ago. With few exceptions, the program today is approximately the same as it was at its beginning. It consists roughly of the following courses: Introduction to Education, Educational Psychology, Social Foundations of Education, Curriculum and Instruction, Special Methods, Evaluation (a recent addition), and Student Teaching.[1]

The introductory course varies widely, changing with the climate of opinion about schools and schooling. What it is introductory to is ambiguous, and is introductory only in the sense that it is the first course. The course in psychology often includes aspects of child and adolescent development and

some work in measurement and evaluation. The social foundations course may vary from an emphasis upon history and philosophy to sociology of the school and community or urban education. In some schools the course in curriculum is given at the undergraduate level but usually it emphasizes methods rather than curriculum development per se. The course in evaluation, mandated recently by a number of states, is a standard beginning course. Courses in special methods for prospective elementary teachers include reading, mathematics, language arts, social studies, and science, although music and art are sometimes required. Students who are heading for secondary teaching positions usually take from one to two special methods courses, one in their academic major and one in the minor.

Student teaching is a field-based course for which colleges and departments of education are responsible but which in fact is carried on in the public schools where clinic teachers are the primary source of whatever help the student teacher receives. During the period of student teacher a supervisor from the university may appear on the scene three or four times and conduct a weekly or biweekly seminar for the trainees. Clinic teachers typically are untrained to observe and diagnose whatever difficulties the student teacher may have and are frequently unable to give assistance even when a diagnosis is made. Thus the student-teaching assignment is one in which the trainee begins the struggle for survival that will continue

well into his or her initial period of employment.

This program covers approximately twenty semester hours for students who are specializing in secondary education, student teaching consuming approximately half of these hours. For students preparing to teach in the elementary school, some thirty semester hours are typically required. The hours in excess of the number for secondary teachers are attributable to the practice of requiring high school teachers to take one and at most two special methods courses, whereas the elementary teacher must take four or five such courses in as many fields.

With the exception of student teaching, all of these courses are typically taught didactically and the learning is consequently verbal. Concepts, even in educational psychology, are often vague and ambiguous so that while teachers may use the same words, they often do so with varying meanings. They seldom know the denotation of behavioral terms such as corrective feedback, reinforcement, motivation, inductive thinking, and the like. The upshot of all this is that, except for student teaching, the courses in education are taught and learned as though they were general academic courses in the college of arts and sciences.

The Near Future

The program of teacher preparation briefly described in the foregoing paragraphs is now being modified and in all probability will continue to change during the next ten to

fifteen years. State after state is increasing the amount of clinical study required of teachers as a condition of certification. Some colleges are requiring observation and participatory experiences in public school classrooms and in college classes by peer teaching during the first year of professional study. These experiences are continued in course after course up to and including the student teaching or internship. Ohio colleges of education are now requiring, by state edict, 300 hours of clinical experience prior to student teaching; a few states are requiring a year of internship, and some are providing special programs for beginning teachers.

There is also a tendency to use more and more audiovisual materials depicting classrooms and the work of teachers as a way of exemplifying concepts and principles presented in courses.[2] In order to find more time for clinical work a few programs are providing quasi-clinical experiences in academic pedagogical courses such as educational psychology, social foundations, urban education, and measurement and evaluation.

Partly because of the growing emphasis on clinical experience certain courses, particularly introductory courses and courses in social foundations, are being pressed to justify themselves as never before. Whether these courses will be significantly reconstructed and oriented toward more quasi-clinical experience or become a casualty is not now clear, but that they are on the defensive can hardly be doubted.

The demand for more clinical experience is also bringing public schools and colleges into strictly defined cooperation in the conduct of clinical work. An increasing number of public schools and colleges will likely enter into formal agreements as to their respective responsibilities for student teaching, internships, if not for beginning teacher programs.[3]

Faculties of education, many of whom have been dubious of research, are becoming aware of the accumulating body of significant research knowledge upon which to base a more adequate program of pedagogical education, so that today faculties are beginning to build research knowledge into both clinical programs and courses in academic pedagogy. As teachers also become aware of this knowledge, their feeling of confidence about the efficacy of educational practice is likely to increase.

There is a question of time. The pedagogical preparation of the teacher throughout most of this century has been shortchanged because of the necessity of including both professional and academic preparation within the four years typically required for the bachelor's degree. For some time there has been a strong demand for more adequate preparation in the subject matter of instruction, especially in the natural sciences, social studies, and mathematics.

To produce teachers more knowledgeable of the content of instruction, it may be necessary either to require more courses or to pack more content and more rigor into the courses now

provided. At the same time, the tendency toward requiring more clinical work and an extended period of classroom experience leading to a year internship is creating a demand for more time for pedagogical studies. The effect that beginning teacher programs may have on the incipient movement toward a year-long internship is not clear.

Nevertheless, these twin forces are fueling the drive for an extended period of teacher education.[4] The question of whether the extended period will consist of a year internship on top of four years of academic and professional preparation, packed with more content and taught with more rigor, or whether the program will be extended to include five years of academic and professional preparation, followed by an internship of one year, or beginning teacher program, or of some other format cannot be answered now. But that a shake-up in the time required for preparation of teachers and the distribution of that time among academic studies, pedagogical academic studies, and clinical pedagogy is clearly in its early phase.

As if this were not enough to unsettle the conventional program, pedagogical technology is gradually creeping into the schools and this is already altering the preparation of teachers. Colleges are beginning to require work in educational technology--games, calculators, audio equipment, videotape, and computers. Almost half of the nation's school districts, according to the National Center for Education Statistics, now provide students

with access to at least one microcomputer or computer terminal. Despite the fact that the technological takeover of the schools is on the horizon, it is only safe to say that colleges, and only a few at that, are beginning to awaken to the full significance of this development.

Academic Pedagogy

The shift in the teacher training program toward more clinical experience will in time force a re-examination of the function of courses in academic pedagogy. This is occurring sporadically in a few schools and will in all probability become a definite trend in the near future. Most courses in academic pedagogy--social foundations, history and philosophy of education, and much of educational psychology--are related to the development of policies and programs and to ethical and legal questions rather than to classroom practices. Most of the propositional knowledge comprising these courses consist of social, economic, legal, institutional, and psychological variables having to do with the static conditions affecting children and youth, teachers and the school. Although they are important in the development of programs and policies, they yield few if any prescriptions for the work of the teacher in the classroom. Consider the following propositions:

1. The peer group influences the general behavior of the student outside the classroom and also has a marked influence upon the student's achievement

2. Prejudice tends to be generalized; i. e., individuals who are prejudiced against one ethnic group are likely to be prejudiced against others

3. Academic aptitude tests consisting primarily of items such as mazes, block designs, figure series, and matrices are relatively unaffected by schooling

4. The rate of growth of economic output in most countries, expecially in the less developed ones, is related significantly to investment in education

These propositions are fairly typical of the content comprising courses in academic pedagogy. Cursory examination of these propositions clearly shows that they yield no information useful to the teacher in their moment-to-moment performance in the classroom. Their utility is found where issues about schooling or programs are being formulated or policies hammered out.[5]

However, the relation of the content of academic pedagogy to work success of teachers has not been studied empirically. The content's claim to utility rests upon rational grounds, assuming, as many instructors do, that clinical practices are ultimately grounded in concepts and principles of academic pedagogy. However, to the teacher, the path leading from these concepts and principles is too often ill-marked or even indistinguishable. Nevertheless, if we appeal to logical considerations, inclusion of some this content in teacher examinations is indicated.

The question of how to decide which concepts and principles to include in a test must be faced. Since there is no empirically established criteria by which to decide the utility of these elements of content, perhaps an optimum procedure would be to select those concepts and principles most relevant to the teacher's work; e. g., program planning, working out rules for classroom management, deciding upon questions of pedagogical ethics and the legal rights of teacher and students.

These concepts and principles cannot be listed here, for one person's opinion is not sufficient justification for including or excluding an element of content in a test. Instead of individual opinions, a study should be made to find out the policy and program questions and the ethical and legal issues that teachers face, especially beginning teachers. The findings of such a study will provide a framework of unsettled situations indicative of the concepts and principles needed for their resolution. These elements of knowledge together with the situations would constitute the substance of tests in the domain academic pedagogy.

Achievement in academic pedagogy can be tested at any level of Bloom's taxonomy. But achievement can be measured at the level of comprehension alone only at the risk of sacrificing the usefulness of the test for professional purposes. While it is important for the teacher to comprehend the concepts and principles of academic pedagogy, that they do so is

not sufficient. They must also show that they can use these elements of knowledge in policy making, program development, and in decision making about ethical and legal issues. The utility of a performance test in academic pedagogy requires that correct responses to its items mirror behavior that the professional is expected to exhibit on the job.

Quasi-Clinical Work

Between academic pedagogy and clinical pedagogy is a component of the program of teacher education that centers in curriculum study and evaluation.

The curriculum's basic elements are subject matter and its order. The subject matter is typically contained in books, games, films, and so forth. The arrangement of content for instruction is found in guides issued through a local office of curriculum director or supervisor. While there is no hard evidence that teachers should know this or that about the curriculum, there is good reason to suppose that they should know certain things about the content. Among these are sequencing, difficulty, cognitive forms of knowledge, and biases. While the question of how much and what kind of sequencing is conducive to learning continues to be debated and while research on the question is meager and inconclusive, both logic and empirical evidence support the view that where knowledge is hierarchical instruction should be sequenced accordingly. Among other kinds of sequencing are temporal, inductive and deductive, logical

and psychological.

That the difficulty of content will vary with vocabulary, sentence structure and length, density of facts and concepts, and the cognitive forms of knowledge is grounded in empirical evidence. It seems reasonable to suppose that if teachers are to adjust instruction to the level of the student's achievement and social background, the teacher should be able to judge the difficulty of content.

Although there is no research evidence to indicate that a teacher should understand cognitive forms of knowledge, it is well established that these are the teachable objects on which instruction focusses and for which students are held accountable. It stands to reason that teachers should at least be able to recognize them. Among these forms, the more significant ones are definitions, laws, rules, procedures, values, and facts.[6] Each of these forms has its own structure and, from a logical standpoint, the ability to analyze them would appear to be related to the depth and clarity of instruction.

The significance of the forms of knowledge is emphasized by reference to the way concepts (definitions) are taught. A typical procedure for teaching concepts, as found in textbooks, is to give the rule, then instances (positive and negative) and the rule again and so on. While this may be useful, especially in the early grades, it is inadequate when taken alone. From an analysis of classroom discourse, the following

information is used in the teaching of concepts:[7]

1. The emotive or persuasive force which the term for the referent has.
2. The alternative ways in which the term for the referent may be used.
3. The difference between one use or meaning of the term for the referent, and some other use or meaning it may have.
4. A characteristic or quality the referent has.
5. A part the referent has.
6. A function the referent has.
7. A use that the referent has.
8. A characteristic treatment accorded to the referent.
9. A relationship between the referent and something else.
10. The way in which the referent compares with something else with respect to a single characteristic.
11. A condition which produces, or causes the referent.
12. A characteristic of the way in which the referent grows, develops, or changes.
13. A class of things to which the referent belongs.
14. An instance or sub-class that the concept has.
15. The results of some operation or procedure involving the referent.
16. A relationship between two or more characteristics of the referent.
17. A characteristic of the variables on which the referent depends.

Analysis of how laws, rules, procedures, and so forth are taught reveals a similar degree of complexity.[8]

The struggle of minorities and women for equality has been accompanied by a number of research studies of the biases of content. That the content and materials of instruction have been negatively biased toward racial and cultural groups and toward women has been well established. Efforts to eliminate these biases have made considerable progress in the last two decades. Furthermore, studies have also shown that teachers, both men and women, exhibit biases in their classroom behavior toward both minorities and women.

The content of courses in evaluation is more clearly defined perhaps than any other subject of the program of professional studies. Bearing in mind that the beginning teacher will have had at most a very elementary course, the test items on evaluation should be limited to the most useful concepts, principles, and practices. This criterion would seem to indicate that the simplest elements of item construction, data organization, and interpretation of different kinds of scores should be included.

Clinical Studies

As already indicated, clinical studies are those which involve the student in observation and performance of classroom work. However, these activities do not always require the use of classrooms. Initial experiences in observing can be developed through the use of videotapes, films, and videodiscs. And

much practice in the performance of the procedures and techniques of teaching can be provided by peer instruction in college classes. While these simulations are extremely useful, they are not sufficient and consequently the student trainee will have considerable experience in observation and practice in public school classrooms.

Among the studies included in the clinical component are special methods courses, generic methods courses, student teaching or internship. Like academic pedagogy, clinical studies contain concepts and principles but they are distinctly different from the concepts and principles of academic pedagogy. The concepts of clinical studies yield principles that in turn provice guidance to the classroom teacher as to what to do in particular situations.[9] Consider the following:

In changing from one activity to another a teacher can make the transition smoothly and thus reduce classroom disruptions and student misconduct. Smoothness of transition can be increased in the following ways:

1. by delaying response to an unrelated activity or stimulus until a more appropriate point;

2. by introducing additional information in such a way as to least interrupt the activities of students;

3. by completing one activity before taking up the next. These rules define operationally what is meant by smoothness of a transition and at the same time provide behavioral meaning

for the concept smooth transition.

Now, clinical content tells the teacher how to prevent the occurrence of difficulties, how to identify difficulties, or how to deal with them when they arise or both. If the teacher does a, b, and c above, there will be less disruptive behavior.

Clinical Knowledge and Domains of Classroom Work

There is a fairly extensive body of knowledge about the generic elements of teaching, but it is not assembled and systematized, and, except for courses in educational psychology, is largely ignored. The first task that developers of examinations must face is therefore that of searching the research literature for generic concepts and principles of teaching, assembling and systematizing them in accordance with domains of classroom work.

There are many ways in which generic clinical knowledge can be expressed and ordered,[10] but for purposes of developing examinations the following seems as feasible as any. First, the concepts from research should be identified and defined. The definitions should be neither vague nor ambiguous nor unduly lengthy. Secondly, behavioral indicators of the concept should be stated and where possible the indicators should be consistent with those given in the research literature. The behavioral indicators are very important, for they provide leads to the construction of alternative responses and render the concept

as concrete as possible. Thirdly, the probable consequences of teaching performance that accords with the concept should be stated. Such a statement will be a principle consisting of two parts: a set of conditions (usually performance), and a set of consequences. Fourthly, a succinct summary of research on the concepts and principles should be stated. It should contain a statement of the conditions under which a principle is likely or unlikely to hold, so that those who are developing test items will know the alternatives, exclusions, and exceptions.

The following is an example of a form we suggest for assembling research knowledge for test construction.

1. Concept name: Corrective instruction

   1.1 Definition: Corrective instruction = any utterance, gesture, technique, or procedure that provides hints to help students respond correctly after an incorrect response.

   1.2 Indicators:

      1.21 The teacher analyzes an oral response, explaining why an answer is incorrect or giving a correct answer.

      1.22 The teacher analyzes a written response, explaining why an answer is incorrect or giving a correct answer.

      1.23 The teacher asks further questions, probing to try to elicit the correct answer

      1.24 The teacher gives examples to clarify and help correct the response.

      1.25 The teacher reteaches the same material in a different format or repeats the same format making

suggestions for clarification.

1.26 The teacher uses graphics and structuring materials to clarify.

1.27 The teacher uses nonverbal signals, nodding yes or no, etc. to indicate parts of student discourse that are correct or incorrect.

1.3 Examples:

1.31 "Remember the rule we use to write a word ending in a consonant preceded by a vowel. Try 'begin' again."

1.32 "Rewrite your last paragraph to include all of the main points that are stated in your theme."

1.33 In a science class a student says, "The reason air in tires holds up an auto is because it gets thick when you put more in." The teacher asks, "What is it that makes air thick? How does the thickness of molecules give support?"

1.34 The teacher gives "running" and "jumping" as examples. She/He asks the class to formulate the rule as it applies to the wrong response "beginning."

1.35 After teaching the concept of density of population, the teacher draws two squares of the same size on the board and represents persons by dots, putting more dots in one square than the other. She/He gives the number of square miles in each square and calculates the density.

1.4 Supporting evidence:

1.41 According to Bloom (1976) about the only evidence in the research literature which deals directly with corrective instruction is in the mastery learning studies, at least at the elementary school level. In eight mastery learning studies, Bloom estimates that the use of correctives accounts for approximately 25 percent of the achievement variance. (p. 127)

In a discussion of studies at the college level, Kulik and Kulik (Peterson, 1979) state there is little difference in the effects of

correctives as to the form used, the timing of correction did increase achievement. Further, the remediation requirement that errors be corrected enhanced performance.

1.5 Principle: If corrective instruction appropriate to the student's level of difficulty is provided, learning will increase.

1.6 Extensions and Exceptions:

Brophy and Evertson (1974, p. 118) found correctives used by teachers who redirected the question to a different student or who provided the correct answer correlated positively .61 with reading achievement in high SES classes.

Wright and Nuthall (1970) in a study of 17 third grade teachers found positive correlation to achievement when the teacher simply ignored an error and redirected the question to another student. She/He then repeated the correct response for the class (terminal structuring).

Where different studies on the same concept and principles have been made, it should be determined whether or not these are genuine replications. Studies that appear to be replications are often simply studies under different conditions of the consequences of a similar set of performances. It is often said that the findings of research studies of the same problem are contradictory. From a logical standpoint, the studies could hardly be contradictory unless they are genuine replications. Where the replication is not genuine, that is, the conditions are not the same, it would seem that we have different studies and that the results are different should not be surprising.

Frequent reference is made nowadays to professional wisdom as a source of pedagogical knowledge. Of course, much

information about teaching is generated by experience and over time it can become extensive. For the most part, however, each teacher must discover it anew, for very little of this knowledge has been collected, organized and made available to beginners. So, confidence in appeals to professional wisdom as a knowledge base for test development is likely to be misplaced, although process-product studies are often confirmations of professional wisdom. But there is probably much useful knowledge in the experience of competent teachers that has been neither tapped nor tested by these studies. If untested professional wisdom is to be used in the development of examinations, it should at least be subjected to a consensus test in order to make sure that any appeal to professional wisdom is supported by an adequate sample of teachers.

A number of categories are suggested in the literature for classifying generic clinical knowledge. The writer knows of no empirical basis for selecting one set of categories ever another. So long as a set accommodates all the generic knowledge and includes the areas of performance for which teachers are responsible in the classroom, the set is satisfactory. Accordingly, the following categories are suggested: planning; management of instruction; management of student conduct; management of time; management of resources; and management of classroom arrangements.

It is beyond the scope of this paper to itemize the concepts and principles associated with each of these categories. That is task that requires far more care, as suggested above, than can be given here. Instead each category will be briefly discussed and one or two examples of clinical knowledge embraced by it will be cited.[11]

1. Planning. What prospective teachers have been taught about planning has been derived from rational considerations rather than empirical studies. The format roughly consists of deciding upon goals and objectives, then the content to be taught, followed by selections of teaching procedures and learning activities together with evaluation. But research indicates that what experienced teachers actually do when they plan bears little resemblance to this format. Experienced teachers ordinarily think first either about what subject matter or what student activities to include. They give much less attention to explicit objectives or to student characteristics than one would suppose from discussions of planning in textbooks.

It appears, at least on logical grounds, that planning is a category whose elements are derived from conceptions of teaching. Didactic (direct) teaching will require planning somewhat different from heuristic (discovery or problem solving) teaching. If didactic teaching is taken as the format, then what research tells us about successful practices yields clues about what to attend to when planning. The same holds for heuristic

teaching. Hence, tests on planning might state the teaching format and then provide items about planning pertinent to that format. If, for example, the format includes making clear assignments and maximizing academic learning time, it seems reasonable to suppose that these aspects of classroom work would be provided for in the plans. Not all aspects of teaching need be in the plan, however, for only the more crucial ones will ordinarily be considered.

2. Management of instruction. This category has reference to organization and control not only of what the teacher does but also the learning activities of students. Again the activities of the teacher no less than those of the students will be shaped in large measure by the format. Research has far more to say about effective performance in didactic than in heuristic instruction.

Research on didactic teaching supports the following practices: making assignments so that the students know what they are expected to do and how to do it; students are held accountable for the work they are assigned to do; academic learning time is maximized so that students can succeed from 70 to 80% of the time; more factual questions and less high order questions are used with low SES students; corrective feedback is given promptly and to the point; student time is not wasted by slowness of the teacher in responding to the student's request for help; use of pointer words such as

"therefore," "this is the main point; is optomized; and the teacher goes about his or her work in a business-like, systematic way.

As just indicated, research on heuristic instruction is in its infancy. But from a logical standpoint the successful heuristic teacher is as well organized and systematized as is the didactic teacher, but with different operations in mind. Heuristic instruction requires that the teacher set the stage so that students become involved in defining problems, in the search for solutions, and in evaluating their work. Many of the learning activities may be suggested by students or by teacher questions that direct students to things they have overlooked. But many of the skills used in didactic instruction are also useful in heuristic teaching. Among these are questioning, giving corrective feedback, providing warmth and reinforcement.

Management of student conduct. Most research on this domain pertains to the elementary classroom and is preventative rather than remedial in its import. A review of this research, however, will likely lead one to conclude that much of it is applicable to the high school classroom. The work of Kounin on classroom management supports the view that smoothness of transition, withitness (teacher awareness), maintaining group alertness, and accountability tend to reduce disruptive behavior. Studies by others indicate that withholding attention

to the student who is disruptive will over time extinguish the disruptive conduct. However, in serious instances of disruption desist techniques are indicated. There are also other techniques based upon reinforcement theory that have proved successful under certain conditions. Although the findings of conditioning studies are disputed and the circumstances in which they hold are not always clearly specified, to overlook them is not justifiable. Furthermore, reality therapy should not be neglected, although the supporting evidence is largely rational plus practical experience.

Management of time. It is evident from research studies that much instructional time is wasted by failing to get the class underway promptly, by failing to keep students on task, by keeping students waiting for help, by interruptions from administrative offices, and by engaging in extraneous activities when the class is in session. Teachers who are business-like, prompt, and persistent in their performance as teachers are more likely to be successful than those who are unorganized and sporadic.

Management of resources. Practically no research has been done in this area but there is a wealth of practical experience to draw upon. From time to time teachers are expected to use resource persons such as specialists in various areas, parents, and teacher aides. There are ways of utilizing these persons successfully and constructively and these practices

are described in the literature.

The material resources consist of audiovisual equipment and materials, field trips, bulletin boards and exhibits, maps and globes, books and standard references, games, calculators, computers, aquariums and herbariums, and pictures. Again the question of how to arrange, care for, and utilize these resources is answered primarily from practical experience as reported in various publications for teachers. Skill in the use of these resources is an important element of teaching success.

Management of classroom arrangements. Considerable research has been done on the question of grouping of students for instruction. There are apparently about three modes of grouping: large group, small group, and independent or individual study. On the whole research indicates that the large group instruction is preferable although the use of small groups is indicated where students need specific help and there is enough personnel such as parents and teacher aides to provide help without sacrificing the time of the larger group. Individualized study is indicated where there is use of instructional media such as computers and other forms of programmed learning.

The seating arrangement is an important factor in instruction, although there is little research to indicate that one mode of arrangement is better than another. There are studies now coming out of the R&D center at Texas and perhaps at other

places that need to be examined for recent information on classroom arrangements.

In addition to generic clinical knowledge, there is content specific knowledge. This knowledge belongs primarily to courses on special methods of teaching and is related most directly to diagnosis, corrective feedback, and such techniques of instruction as are determined by the nature of the content. In the teaching of reading, mathematics, science, and other specialized contents, it is essential that a teacher be able to diagnose the points of difficulty a student is having in learning the concepts, principles and skills belonging to the particular subject. It is here that the trainee should acquire the ability to judge the difficulty of subject matter, decide the proper sequencing of concepts and principles, and recognize various biases content is heir to.

Pedagogical knowledge in the clinical domain is fairly well grounded in research on the teaching of reading and mathematics. It is much less secure in the social studies and science. This difference is attributable to the fact that much less research has been done in the latter two fields than in the former.

Notes on Item Development

The general position taken in this paper is that correct responses to test items reflect as nearly as possible the sort

of behavior that research knowledge and verified professional wisdom prescribe for teacher performance on the job. This indicates that test responses require more than comprehension. While prospective teachers should be required to demonstrate that they understand terms, facts, and other elements of pedagogical knowledge, it is even more important that they demonstrate the ability to behave in ways consonant with the requirements of both research knowledge and professional wisdom.

The substance of the foregoing paragraph indicates the need for a variety of item forms and technology in test development. Considerable ingenuity will be required to devise these items, and only rough-and-ready examples can be given here.

1. To test the ability to judge the difficulty of subject matter. In the following example the ability is to judge the proper level of reading books:

> You are the teacher of Paul, Pam, Richard, and Connie. You are to select books for instruction in classroom. You will hear each child read aloud (via video recording) the three selections which he or she has just finished reading silently. After each selection, decide if the material is too easy, appropriate, or too hard for that child's instruction.[12]

The number of words miscalled (say, one error for twenty running words) may be used as a criterion of difficulty.

2. To test the ability to identify errors and to give corrective feedback:

> The work of a fifth grade pupil who is trying to solve a problem in long division is shown on a videodisc or a computer and the trainee is asked to study the pupil's work and to identify

the errors and indicate what to do to reduce the pupil's tendency to make such mistakes.[15]

The testee's prescription may be evaluated as being totally relevant, moderately relevant, or not relevant.

3. To test the ability to respond to a pupil in class discussion:

An audio or video recording is made of verbal exchanges in the classroom. The trainee is asked to supply a response to that a pupil says.

Teacher: Crimes are classified in what way?
Pupil: Well, the first one would be treason. Treason, and there is felony, and misdemeanors.
Teacher: What is the meaning of treason?
Pupil: There are two subdivisions--sabotage or something like that.
Teacher: . . .

The testee is asked to make the next response to the pupil. The testee's response may be evaluated as being totally relevant, moderately relevant, or not relevant.

4. The ability to respond to disruptive behavior:

By videotape a child is shown repeatedly punching another child across the aisle with his pencil while the teacher is explaining an arithmetic problem to the class. It is obvious from the videotape that the teacher has become aware of the disturbance.

The testee is asked what he or she would do. The response could be evaluated by reference to multiple answers: desist, ignore the behavior, suggest some substitute activity. In addition, reasons for making one decision rather than another could be stated as multiple choices.

The foregoing illustrations are types of items for testing the clinical competence of teachers. Somewhat the same

procedure can also be used in testing competence in academic pedagogy. Consider these examples:

1. By videotape, a teacher is shown as she is being approached by a parent to tutor her child in arithmetic. The child has been in the teacher's class for the past semester and is failing the work. After some discussion the teacher agrees to tutor the child for a fee agreed upon by both the teacher and the parent.

The testee is asked to state the ethical point of this situation.

2. A teacher detains a student after school to make up assigned work. When the student does not show up at home, an hour after school is closed, the mother calls to inquire about her son. The principal finds the student is being detained by Mr. Able to make up work. When the mother is told about the detention she becomes irate and threatens to prosecute the principal.

What are the mother's legal rights? How is the teacher legally and professionally amiss?

Certain types of objectionable items can be avoided if it is kept in mind that tests of a professional should require the sort of responses that the testee is expected to exhibit on the job. Among these avoidable items are the following: a) tautological items, i. e., where the correct response is the same as the stem, differing only in words; b) items whose correct responses depend more on general information and mental capacity than on professional training; c) items that require little, if any practical judgment such as true-false items.

Moreover, in the final analysis professional competence is always evaluated in terms of procedures rather than outcomes.

This claim is elaborated in the following passage.

> The point of this paper is that teaching can be evaluated in a meaningful sense if, and only if, we have tested knowledge of teaching behavior. This means that for each significant objective of instruction there must be tested ways of teaching such that it is possible to say that if a teacher makes the proper diagnosis and follows the prescribed ways of handling the subject matter and the pupil, he will have satisfied the requirements expected of a professional worker. It will not be possible to say that his instruction will lead to such and such an amount of learning on the part of pupils, even though he may be following prescribed modes of teaching. This is so because pupil learning is conditioned by more factors than those involved in teaching behavior. Many of these are beyond the teacher's control. No one should be held responsible for outcomes beyond his influence. But the teacher can and ought to be held responsible for following tested methods of diagnosis and treatment. This is all that can be required of any professional worker whether he be a physician, an engineer, or whatnot.[14]

If this position has merit, examinations that give evidence of the ability of beginning teachers to follow procedures appropriate to situations is indicated.

The Not-So-Near Future

Those who are familiar with the many current books on the future and articles appearing from time to time in the Futurist are aware of the various scenarios for schooling in the year 2000, give or take a half dozen years. Some of the scenarios virtually write the schools off and paint pictures of education in the family room or special learning rooms in the home where children as well as adults learn via telecommunication. Other scenarios are more conservative, retaining the school as an institution but picturing almost all instruction

as interaction of students with computers.

I am inclined toward the conservative view that the school will hold on and that it will serve not only a custodial function but also as a learning environment, far more effective than it is today. Granted that most instruction will ultimately be computerized, the question arises as to what will be the role of the teacher in that environment.

No hard answer to that question can be given, but some answers seem to be more likely than others. Children will be housed in school buildings, as they are today, and teachers will be their guardians, maintaining order and supervising the use of computers. In all probability some students will not learn well from computers, either because of psychological aberrations or physical constraints of some sort, and will require supplementary instruction that only teachers can provide. Furthermore, students will become satiated with computerized instruction and will need recreational activities.

The school will be extended down almost to the infant level. Teachers will shepherd the young child, beginning in the nursery school or earlier and continuing through the primary grades. There will be a period of gradual introduction of the child to computerized instruction, the socialization of the child in the school group and in the ways of the school as an institution.

As the child progresses through the school and becomes more and more capable of dealing with abstract ideas, teachers will be responsible for leading students into realms of thought and feeling that heretofore have been inaccessible because of the burden of instruction in the conventional curriculum. In junior and senior high school years, and to some extent in intermediate grades, teachers will explore ideas with children, leading them to consider questions of truth, justice, the good, the beautiful, and fundamental questions about reality and destiny that from time to time haunts the flickering thoughts of youth.

The arts, too, will come into their own. Children and youth will have opportunities, beginning in the nursery school and extending throughout the school program, to express themselves in a wide spectrum of media--sound, color, stone, clay, plastics, wood, metals, bodily movement, acting, and so on--under the direction of teachers who are talented and trained in the various arts.

The expressive and artistic side of human potentiality has been all but overlooked in the school program. Staffing policies have necessarily emphasized the need of teachers for the academic categories of knowledge and instruction, thereby keeping the art staff at a minimum. Educational technology will likely usher in new staffing policies favorable to the artistic and intellectual life.

To sum up, the probable role of the teacher in an age of telecommunication and computerized instruction would appear to be that of a custodian, a socializer, a recreationist, a manager of group deliberation, and a leader of philosophic and artistic thought and expression.

The professional preparation of the teacher will be quite different from what it is today. While there will continue to be an emphasis upon child development and learning, much attention will be given to learning about computerized instruction, how to socialize the child, how to manage children individually and in groups, how to counsel children about personal problems, how to initiate and conduct group deliberations, and how to plan and conduct recreational activities. In addition they will need some instructional skills in order to cope with students who do not do well with computers and who will consequently need supplementary instruction. Some teachers will be specially prepared in the arts and intellectual fields of philosophy, literature, and history.

If the kind of responsibility suggested above becomes a reality, it seems obvious that the examination of teachers would need to be considerably modified. The emphasis would be upon examinations of professional competencies in the areas of socialization and counseling, recreation, group management, school management, methods of discussion and knowledge analysis, and in computerized instruction.

Closing Notes

There is no list of characteristics of good teaching in this paper. The reasons for this omission are simple. In the first place, the author views this approach as misleading because it focusses attention on the wrong question: what is good? Instead, the question should be: what do we know? In the second place, no person can set forth a definitive and dependable list of knowledge without thorough study of the research literature, a study I have not made and I suspect no one else has made. In the third place, no collation of lists independently arrived at is likely to yield a complete picture. I have, therefore, suggested that a group be formed to sift the research literature for relevant knowledge and that such knowledge be expressed in a particular format to avoid equivocation and to specify exceptions, exclusions, and alternatives. Examinations based upon such a body of knowledge would, I believe, stand up in court were they challenged.

The tendency to appeal to professional wisdom is widespread, but little consideration is given to the question of how claims of wisdom are to be evaluated. If someone says "This is an instance of professional wisdom," how can the claim be assessed. "It works for me" is certainly not sufficient evidence of general experience of teachers. It is therefore suggested that claims of professional wisdom in support of a practice be confirmed or disconfirmed by samples of elementary and

secondary teachers judged to be successful.

A number of states have established lists of competencies and some state departments of education treat them as sacred objects. National examinations that ignore them are likely to be looked upon with skepticism. Since many of these competencies have little to support them save opinions, the problem of how to treat them will not be easy.

The development of items that take account of exceptional cases, exclusions, and alternatives will tax the ingenuity of the most accomplished item constructor. A review of items by a team of researchers, most familiar with research literature, is indicated.

Once research information is assembled and organized, it should be up-dated each year. An office should be set up for that purpose. Extensions and revisions of old information as well as new developments would be fed into the accumulated knowledge. This constantly revised body of knowledge would be the basis of examination revisions.

Four terms are used in discussions about evaluation of teaching: competency, competence, performance, and effectiveness. These terms are defined by Medley in an unpublished paper entitled: "The Role of Teacher Educators in Teacher Competency Assessment," November 7, 1980. I find these definitions quite satisfactory and suggest that they be used in discourse about the evaluation of teaching.

I am of the opinion, however, that measurement of teacher effectiveness is flawed, if not actually inappropriate, when the assessment is made without specifying some set of standard classroom conditions in which the teacher performs.

Performance is defined as teacher behavior in a teaching situation and effectiveness is defined as student achievement resulting from the teacher's performance. Now it is possible to think of a range of classroom conditions under which a teacher may perform. One extreme would be conditions where the teacher could not possibly perform in accordance with acceptable practices. The other extreme would be a set of conditions in which a teacher could perform in accordance with the full range of accepted practices. Between these two extremes are all sorts of variations. If a set of standard conditions somewhere between these extremes were worked out and accepted, it would then be possible to assess teacher effectiveness in meaningful and defensible terms.

References

1. For a brief account of the program see Howey, Kenneth R., and C. Emily Feistritzer. A Compilation of Recent Studies in Teacher Education. A study submitted to National Teacher Development Initiative, U. S. O. E. September 1978 (manuscript). pp. 22-29.

2. See Howey, op. cit. pp. 30-31 for earlier evidence to the contrary.

3. Howey, op. cit. 34f.

4. Denemark, George et. al. The Case for Extended Programs. ERIC:SP 015/395.

5. For a more extended analysis see Smith, B. Othanel et. al. A Design for a School of Pedagogy. Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 1980, pp. 69-78.

6. Smith, B. Othanel et. al. A Study of the Strategies of Teaching. Bureau of Educational Research, College of Education, University of Illinois. Urbana, 1967, passim.

7. Smith, et. al. Op. cit. p. 61.

8. Smith, et. al., Op. cit. Passim.

9. Smith, et. al. A Design for a School of Pedagogy. pp. 59-67.

10. Denemark, George et. al. Op. cit.

11. There are several well known, published summaries of research on teaching. These are general summaries, useful for a quick overview. For test purposes, original sources should be used.

12. Wade, Eugene W. Problem Solving Proficiency among Elementary School Teachers III. Teachers of Reading, Grades 2-5. Monograph of the Institute of Educational Research, School of Education, Indiana University, Bloomington: Indiana University, 1961. p. 4.

13. Turner, Richard L. Problem Solving Proficiency among Elementary School Teachers II. Teachers of Arithmetic, Grades 2-6. U. S. Office of Education Cooperative Research Project No. 419. Bloomington: Indiana University, 1960, p. 11.

14. Smith, B. Othanel. "Teaching: Conditions of Its Evaluation," in The Evaluation of Teaching, A Report of the Second Pi Lambda Theta Catena. Washington, D. C.: Pi Lambda Theta, 1967.